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DEPARTMENT OF BIOLOGICAL SYSTEMS ENGINEERING

ISSUE 1

NEWSLETTER OF ACHIEVEMENT

APRIL 2005

Welcome Comments from Department Head



Joining the Department of Biological Systems Engineering at the University of Nebraska has been a pleasure, and I am grateful for this opportunity to say hello to each of you. Since my

arrival in November, I have been impressed by the long history and rich tradition of the Department. I am equally impressed by the strong support that alumni and friends give the Department; I have already met some of you, and I look forward to meeting many more of you in the coming months. Biological Systems Engineering has long been a leading Department at the University of Nebraska. As Biological Systems Engineers we have the knowledge and expertise to continue this leadership by addressing the agricultural production, water resources, environmental, and economic development challenges that face Nebraska, the region, and our country. I encourage you to visit our web site at bse.unl.edu to explore what is happening in the Department of Biological Systems Engineering. Our strength is in our excellent students, our dedicated staff, and our active and well-qualified faculty and in the support we receive from you, our alumni and friends. As the Department of Biological Systems Engineering begins its second century, we will strive to uphold the tradition of excellence that has been the hallmark of the Department. We request your participation and your help in continuing the tradition.

*Ron Yoder
Department Head*



Jennifer Melander uses new lab.

New Lab in BSE

Memories of welding and holiday potlucks in the basement of L. W. Chase Hall have been replaced with a state-of-the-art Biomedical Imaging and Biosignal Analysis laboratory.

This newly constructed biomedical engineering lab provides support for Dr. Greg Bashford's research. The laboratory includes a scan area (for imaging human research subjects) that is partitioned from the rest of the laboratory by hospital curtains for privacy, and conventional bench-top space. Major lab equipment includes a Siemens Antares commercial diagnostic ultrasound machine, tissue-mimicking phantoms, a ventilation hood, ultrasonic pulsers/receivers, arbitrary function generators, RF power amplifiers, digital oscilloscopes, and several custom-built translation tables. In addition, several National Instruments DAQ cards are contained within high-power workstations. Computing resources include MATLAB®, LabVIEW, and Visual C++ software.

The laboratory is used for medical imaging studies and biosignal analysis, such as ultrasound mammography for breast cancer screening, echodentography, cardiovascular flow quantification, ECG/EEG instrumentation, and evoked potentials for neurological experiments.

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Dr. Martin Serves as BSE Interim Head



Martin

Dr. Derrel Martin's service as Interim Department Head was greatly appreciated by faculty and staff. His low-key, but straight-forward style of leadership kept the department moving forward. He served as Interim from October 2003 until November 2004. During this time the department continued to grow with a biomedical laboratory addition, a new faculty hire in food engineering, and continued success in research, teaching and extension programs. We are also pleased that Derrel is back in the faculty ranks to continue contributing to the water program in our department. Thanks, Derrel.

RSVP for the *Annual Spring*
See Page 6 *Recognition*

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Student News
Page 5



Left to right: Derrel Martin, IANR Vice Chancellor John Owens, William Splinter, Chancellor Harvey Perlman, ASAE president Jerry Willie.

Splinter Labs

Dr. William Splinter was honored on Oct. 29, 2004 for many years of service and gifts to the University when the Biological Systems Engineering Laboratory building was named the *Splinter Laboratory*. Dr. Splinter served as head of Agricultural Engineering from 1968 to 1988, and held the George Holmes Distinguished Professor Chair in the Agricultural Engineering Department. During that time, he also served as President of ASAE for one year. After retiring, he twice served as interim Dean of the College of Engineering and Technology, as Acting Associate Vice Chancellor for Research and Sponsored Program Services, and as Associate Vice Chancellor for Research and Director of Technology Transfer. He also served as interim Director of the Nebraska State Museum.

The only Nebraska engineer to be elected to the National Academy of Engineering, he was cited for the invention and development of safer aerial spray systems, benefiting both the environment and stronger agricultural practices. Among many professional recognitions he has received are the John Deere Gold Medal and the Massey Ferguson Gold Medal, both from ASAE, and he was named an Honoree for the Nebraska Hall of Agricultural Achievement. Dr. Splinter has published over 90 technical papers and has 5 patents. He is currently the Volunteer Director of the Lester Larsen Tractor Test and Power Museum (<http://tractormuseum.unl.edu>).

A bronze plaque has been placed on the lab building to commemorate the naming.

New Department Head

Former Professor and Head of the Biosystems Engineering and Environmental Science Department at the University of Tennessee, Dr. Ron Yoder assumed his new position as head of the Department of Biological Systems Engineering on November 15, 2004. "The biological systems engineering department at UNL is rated among the top programs in the United States and I am delighted that we attracted a strong water engineer with extraordinary administrative and faculty experiences to lead this key academic department," said John Owens, Vice Chancellor of the university's Institute of Agriculture and Natural Resources and University of Nebraska Vice President of Agriculture and Natural Resources.

Dr. Yoder was at Tennessee for 12 years, the last four as department head. Before arriving at UT in 1992, he served stints as an agricultural engineer at the University of Wyoming, Hertzler Farm and Livestock Co., and the U.S. Department of Agriculture – Agricultural Research Service. At UT Dr. Yoder taught courses in irrigation and waste management system design, surveying, monitoring hydrologic phenomena, and engineering design. His areas of research include water quality assessment and improvement, crop water use measurement and management, subsurface transport of agrichemicals, and soil water measurement.

Dr. Yoder received his bachelor of science in civil engineering from Drexel University in Philadelphia, his master of science in agricultural engineering from Clemson University, and his doctorate in agricultural engineering from Colorado State University.

HELLO-GOODBYE

As the Beatles song suggests, since the last newsletter we have said hello to new faces and goodbye to familiar ones.



He's been involved with agriculture most of his life, and now **Stuart Hoff** is the manager of the Rogers Memorial Farm. Stu was a student employee (mechanized agricultural major) at the farm twenty years ago.

A year-and-a-half ago, **Carolyn Wren** retired and has been enjoying traveling hither and yon.

This year **Ann Fiedler** left the department for a full-time position with the School of Natural Resources.

Lakshmi Koppolu (Ph.D. BSE) moved to New Jersey for her husband's career opportunity.

Lisa Stahr, who received her M.S. from the department and worked as a research engineer, became part of the out-migration when she left for sunny Texas.



A Fulbright Scholar, Dr. **Joseph Mpagalile** came to Nebraska to conduct research on a solar-powered, small-scale vegetable oil extraction system suitable for use in remote rural areas. He has been working with Dr. Milford Hanna and the staff of the Industrial Agricultural Products Center. Joseph is a lecturer at Sokoine University of Agriculture in Morogoro, Tanzania.



After several years in Florida, arriving in the department on a cold, wintry day last year was quite a shock for **Ayse Irmak**, a new research assistant professor specializing in crop modeling, GIS, and precision agriculture. Ayse received her Ph.D. in Agricultural and Biological Engineering from the University of Florida in Gainesville. Ayse comes from the Mediterranean city of Mersin, a major shipping center in eastern Turkey.



Suat Irmak joined the department in December of 2003. His hometown is Adana, Turkey's fourth largest city, located on the Mediterranean coast. He received his Ph.D. in Agricultural and Biological Engineering from the University of Florida in Gainesville. Suat is an assistant professor and focuses his research and extension work on agricultural water management, and pressurized and gravity irrigation systems.



In July, **Jeyamkondan (Jeyam) Subbiah** joined the faculty ranks as an assistant professor with a joint appointment in BSE and Food Science and Technology. He completed his Ph.D. in Biosystems Engineering at Oklahoma State University. Jeyam is from Madurai, India, and teaches and conducts research on food safety using computer vision/imaging.



A self-proclaimed "gym-rat," **Daphne Nebel** is the new secretary for the environmental and food processing bay. She is very interested in fitness, nutritional, and natural/alternative health practices and has incorporated a total lifestyle management system that she aspires to use in helping others achieve a healthier life.



Nancy Swarts has joined the soil and water bay as a new secretary. She has an interest in cows of all kinds. With her husband and family, Nancy lives on a farm west of Lincoln and practices sustainable agriculture.



If you notice a slight accent on the receiving end of the phone when you call the Department, you're speaking to our new receptionist, **Sarah Sedlacek**, who comes to us from Alabama. She and her husband are expecting the birth of their first child this year while he is deployed overseas.

FACULTY AND STAFF NEWS

Dr. Curt Weller studied the diversity of a multitude of food industries for four weeks this past summer with a group of university professors and 22 students. The setting was one that many of us might have enjoyed—France. The intensive study-tour included visiting a variety of crop production facilities as well as considering the economic and social patterns of food, production, and distribution in this food conscious nation.

Dr. David Jones received recognition from the College of Engineering and Technology with a Distinguished Teaching Award, and was named an Outstanding Advisor by the Student Advisor Board.

In January 2005, **Dr. David Jones** and **Dr. Bruce Dvorak** received awards of Commendation from the Parents Association and The Teaching Council of the University of Nebraska-Lincoln.

The Holling Family Distinguished Engineering Educator, a three-year professorship, was awarded to **Dr. Dennis Schulte**.

Dr. Leonard Bashford accompanied the Quarter-scale Tractor Team to the annual competition in the Quad Cities. He also testified concerning a proposed bill in the State legislature that would have had a negative impact on the Nebraska Tractor Testing Facility. The bill eventually died because it was not brought to the floor of the legislature for a vote.

Seeing what really goes on in the corridors of power, **Dr. Rick Koelsch** spent a half-year sabbatical in Washington, D.C. with the USDA - CSREES working on environmental

policy for animal feeding operations. He focused specifically on opportunities for alternative technologies applied to animal feeding operations under the new EPA regulations.

Adjunct Research Assistant Professor **Alejandro Amezcuita** was awarded a *V. Duane Rath Foundation Graduate Research Fellowship*, which is granted on a competitive basis by the International Association of Food Industry Suppliers (only two graduate fellowships are awarded annually in the United States).

Dr. Aris Gennadios, Adjunct Associate Professor, was recognized as a visiting Master Alumnus during UNL Masters Week. Only five alumni are selected University-wide each year. He shared his educational and business experiences with students in the department during his visit. Dr. Gennadios is now the Director of Business Development, Oral Technologies Business Unit, for Cardinal Health, Inc., in Somerset, New Jersey.

Wayne Woldt and staff members **Bonita Delhay** and **Scott Minchow** were recognized by ASAE with a Blue Ribbon Award in the Educational Aids Competition for the *Ground Water Flow Model Manual*, a manual they developed to accompany the sand-tank ground water model. The model and manual are available for ordering through <http://groundwater.unl.edu/>



Julie Hunter and Plaque of Cliff

Cliff Hunter Memorial Picnic

This past fall, members of the department and invited guests joined Cliff Hunter's family at Rogers Memorial Farm for a buffet picnic to remember the farm manager, father, friend, and colleague who touched so many lives before his untimely death. During a short program, Dean Eisenhower presented a plaque from the department to be placed in the farm shop building. Mark Schroeder, Paul Jasa, and Stuart Hoff also spoke about the unique place Cliff held in each of their lives, and of Cliff's dedication to the farm. Julie Hunter expressed her thanks on behalf of the family. A tour of the farm to see the impact Cliff's work had on the department and the University concluded the event.



Visitors tour Rogers Farm via a tram



Team members, left to right: William Naber, Bart Coffman, Dan Jahraus, Dr. Leonard Bashford, Craig Prothman, Garrett Pommeranz, Jason Podany, Brian Stahlecker, Adam Huttenmaier, Scott Albrecht, and Aaron Krafka

Quarter-Scale Tractor Team

The Quarter-scale Tractor Team made its annual trip to the Quad Cities last spring and came away with its best showing to date. Breaking into the ranks of the top five by finishing fourth, the team was also voted the *Best Sportsmanship Team* by the other teams. These students raised their own funds, designed, and built their tractor. The current team is hard at work on a new tractor and hopes to improve on last year's excellent finish.

Dr. Leonard Bashford initiated, organized, and developed the quarter-scale project at the University of Nebraska. As faculty advisor and team sponsor, Dr. Bashford has played a key role in the increasing success of the team. His support, experience, guidance, and advice have been important to the success of the team in design, fabrication, problem solving, and design improvements. As the Director of the Nebraska Tractor Test Laboratory, Dr. Bashford has made the facility's resources available to the team. The team feels fortunate to have Dr. Bashford's advice, and credits much of their success to his leadership.



2004 Scholarship Winners: (All are not pictured) Michael Hofmeister, Garrett Pommeranz, Tyler Saatman, William Sabatka, Joel Stenberg, Ross Miller, Jason Podany, Joel Stenberg, Nicholas Anderson, Bart Coffman, Nicholas Tomsen, Christopher Junck, Austin Lammers, Andrew Dozler, Anthony Johanson, Steven Fleer, Nathan Jacobitz, Tyler Smith, Sarah Hanson, Grant Janousek, Kurt Petersen, Kathryn Milius, Crystal Powers, Jeremy Becker, Quentin Cooksley, Ross Havlat, Todd Kavan, Kevin Tacke, Amy Dimick, Nathan Beins, Nicholas McCready, Brett Reinboth, Nicholas Wiese, Casey Mader, Nicholas Willis, and Richard Wilson.

Freshmen Eat Cars

Yes, you read that correctly. As an introduction to agricultural and biological systems engineering, Dr. Dennis Schulte, with help from BSE Professor Emeritus and former CASNR Dean Dr. Don Edwards, junior Katie Milius, and graduate student Melissa Halverson, steered the 118 freshman class into their first design project—an edible car. The students examined and researched materials to find the properties needed to meet several design criteria. One, the car had to roll down an inclined ramp and onto a flat surface without falling apart, and two, that the car needed to be consumed within five minutes by the team members at the end of the competition. Dr. Schulte pronounced the event a rousing success.



Edible Car Winners from left to right: Tara Somer, Brian Biga, Rob Corn, and Isaac Mortensen

Scholarship Recognition

Cold, rainy weather forced a change of venue for the annual fall Ice Cream Social and Scholarship Recognition. The main floor of L.W. Chase Hall was transformed into a bee-hive of activity with scoopers and consumers winding their way through a maze of tables and chairs in celebration of the academic accomplishments of students in our department.

Dr. Derrel Martin read the names of the scholarship recipients and the scholarships received. Over \$24,000, from a variety of sources, was awarded to 37 students representing the three departmental undergraduate majors. Congratulations to one and all.



Left to right: Mike Kocher, Tom Franti, George Meyer, and Rick Stowell serve ice cream.

Annual Spring Recognition Banquet

The Annual Spring Recognition and Awards Dinner presented by the Biological Systems Engineering Department and the ASAE Nebraska Section will be on Friday, April 22, 2005, at 6:30 p.m. in the East Campus Union. Faculty, staff, students, emeriti, alumni, and guests are invited. Please mark your calendars and plan to attend. The cost for faculty, staff, and guests is \$16.00. The cost for students is \$12.00.

RSVP to Eileen Curtis, 402-472-3905
or ecurtis1@unl.edu
by April 18

The University of Nebraska-Lincoln is an
equal opportunity educator and employer
with a comprehensive plan for diversity.

New Graduates

Graduation marks an academic achievement for all departmental students. This past year, 40 undergraduates (in the three undergraduate majors) and three graduate students completed this phase of their formal education. Although this is the final degree for some, others will go on to more study.

Three new Ph.D. graduates launched the next phase of their careers—literally—out in the world. **Girish Ganjyal** is a Principal Scientist with Midwest Grain Products in Atchison, Kansas, and already has two patent applications in the works.

Alejandro Amezcuita is now working in Bedford, England, as a Project Leader in Human Safety at the Unilever Colworth Research Center. **Joao Camargo Neto**, who studied machine vision, has returned to Brazil and his job with Embrapa.

We wish all our graduates the very best in their careers and encourage alumni to stay in touch with our department about their career, address, and life changes by visiting our website at: bse.unl.edu/Contact/contactindex.htm. Click on Alumni Update in the left-hand menu to update information.

Generous Gifts to Endowments in BSE

The department has recently received two gifts of \$50,000. The first was received from Les and Harriet Jochens to establish an endowed fund in their name to support students in BSE. The second, from LeRoy and Jean Thom, increased the endowed fund scholarship fund that was previously established in their name. We are grateful to the Jochens and the Thoms, and to all who have established endowments, or made contributions to funds that support BSE programs. For information about establishing new endowed funds, or contributing to existing funds, contact Ann Bruntz at the NU Foundation, 402-472-0372 or abruntz@foundation.nebraska.edu